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Original Articles

PRESIDENT'S ADDRESS

SOUTHWESTERN SOCIETY OF ORTHODONTISTS

HAMILTON D. HARPER, D.D.S., SHREVEPORT, LA.

THE privilege of welcoming you to another annual meeting of the Southwestern Society of Orthodontists has been enjoyed by nineteen other Presidents. The precedents set by these men have been high, and it is with this knowledge that I humbly ask you to receive my earnest attempt. This I can truthfully say—not one of the Past Presidents more thoroughly enjoyed his tenure of office or could have welcomed you to his meeting with more genuine sincerity and cordial hospitality than I now extend to each of you.

This is our twenty-fourth annual meeting—we are almost a quarter of a century old. We have grown from the original seven men who were the charter members of our Society when it was founded in 1920, to a membership of seventy-one. Five of our founders are still most active and are pillars of strength in our Society. We have been most fortunate, I think, in losing only three of our members, Oscar Busby and Frank Harrison, both Past Presidents, and Neltie Coleman, all wonderful men. To begin to outline the achievements of our Society and its members would be an endless task, but I know it is safe to say that the Southwestern Society of Orthodontists ranks high among the component Societies of the American Association.

Those men who were specializing when our Society was founded, and those of us who began shortly thereafter, remember the adjustments and problems that had to be met following the First World War. I do not think that our problems then compare to those of our members who are today serving their country in World War II.

In the period of 1914 to 1918, very few of our members had been specializing long enough to build up a very large practice; thus, the problem of the

Delivered before the meeting held at Shreveport, La., Feb. 29, 1944.

continuation of the orthodontic treatment of their patients was not an insurmountable one. When I look out upon this group this morning, I note a number of missing faces. Sixteen of these men I know are serving their country to the best of their ability. They have made great personal sacrifices, sacrifices that may be hard to overcome. Before it is all over, some may be called upon to make his greatest and final sacrifice. I pray that this will not have to be.

No matter how busy or perilous may be their days, or how restless their nights, I know there are times when these men think of the interruption of their life's profession. I have had letters from these men, one of which I will particularly mention, from one of our members stationed on a tropical island in the South Pacific. He frankly states his concern over picking up the "loose ends" upon his return, but philosophically says, "there will certainly be some place left to practice orthodontics." He speaks of the others who have given up their practices and, to use his words again, "will have to begin from scratch upon their return." These and equally baffling problems are undoubtedly being turned over and over in the minds of these men in the Service.

Without putting into words any definite recommendations, I wish to leave these thoughts with each of you. I feel that there are three points which should receive our careful consideration:

First, we must protect the good name of our member in the Service and help to maintain for him an opportunity of returning and gathering up "those loose ends." He is rendering a service to his country that you and I were looked upon as being too old to perform. It would be most unbecoming a member of this fine Society to use the absence on one of his fellow members to his gain and advantage. Perhaps you, too, read an editorial appearing in the March issue of *Oral Hygiene* under the title "The Stay at Homes Are Doing Well." It expresses the very views that I have in mind. What a comforting feeling it will be to those men to know that they are getting a square deal back home.

In the second place, we must consider the welfare of those patients left stranded, and carry on the orthodontic work to the best of our ability. We need not feel that our diagnoses, plan of treatment, and prognoses of these cases should necessarily conform to those of the men who began the work. But, our main objective should be a successful termination of the treatment that was entered into in good faith and was rudely interrupted by circumstances beyond control.

In so doing we will go a long way toward accomplishing my third point, that of maintaining the good name and high standards of orthodontics. It goes without saying that if we fail to do our best for these patients while our servicemen are away, and deny these youngsters the benefits of successful orthodontic service, then the orthodontic profession will receive a black mark against it. What greater service to these patients, and greater act of professional courtesy to our absent members, could we render? A feeling of personal satisfaction would be one of the lesser rewards.

Everybody has felt the impact of this war, either by minor inconveniences, certain deprivations, or the assumption of additional duties and burdens. We, as orthodontists, are called upon to see more patients than ever before, whether these be new cases or those coming to us from the offices of the men gone into the Service. I sincerely feel that now is the most opportune time for every man

in his own locality to stress the importance and necessity of a full cooperation between the school authorities and the professional man. The way has been pointed by the men in Oklahoma, and has been followed by others in Kansas and Texas. The state of California has gone so far as to have the State Legislature add a section to its School Code which states, "No absence of a pupil from school for the purpose of having dental service rendered shall be deemed an absence in computing average daily attendance."

It may not be possible or even practical for all of us in our various states to approach this problem from the same angle. But, whether we appeal to the State Legislature, State Board of Education, or to our own local Superintendents of Education, I feel that now is the time to press home the importance of an official sanction for a child to miss a few hours from school when keeping an appointment with a dentist or physician. This absence should receive no penalty. A group of us recently met with our local Superintendent of Schools and a number of school principals, and, upon explaining the problems to them, found that they were most receptive and offered their full cooperation. It is now a matter of "parent education," for, in a number of cases, it is the parent who objects to the child missing classes and not the school authorities.

With official records showing that 20.9 per cent, the largest percentage of rejections in the Army, has been attributed to defective teeth, it should not be difficult for us to attain full cooperation from the school authorities and the parents to help to build better dental health in the younger generation. I recommend that every effort be directed toward a better dental educational program. Upon securing the permission from the school authorities for a child to keep appointments during the school hour, I suggest that we give it the widest publicity.

Much more could be said concerning the problems I have only touched upon, but, knowing what a fine scientific program is in store for you, and that each one present is anxiously awaiting the opportunity of hearing our distinguished guest, Dr. Charles Tweed, I shall bring my remarks to an end.

I wish at this time to express my sincerest gratitude to the officers who served with me during the past year. As you all know, we had difficulty in arranging for our meeting here and were very late in formulating our final plans. The splendid cooperation from the Board of Censors, the Chairman of the Program Committee, and the Secretary, and their wholehearted desire to help made the task of presenting this twenty-fourth annual meeting easier and more pleasant. I extend to them my sincerest thanks and appreciation for their unwearied support and earnest efforts. To each individual member who contributed his part, whether acting as a member of a committee or responding to the calls of the Program and Table Clinic Chairmen, I give my sincere thanks.

The local Committee of Orthodontists and the entire membership of the Fourth District Dental Society welcome each and every one, and extend to you our most cordial hospitality.

And now, in closing, let me again say how thoroughly I have enjoyed my tenure of office, and how grateful I am to the members of the Southwestern Society of Orthodontists for having honored me with the highest office of the Society. I shall always look back upon this experience as one of my proudest and happiest moments. I trust that my efforts to serve you and the Society have not been in vain, and that, upon adjourning, each of you may carry home a feeling of time spent both pleasantly and profitably.

DENTAL ABNORMALITIES AS FOUND IN THE AMERICAN INDIAN

CLARENCE H. WEBB, M.D., F.A.C.P., F.A.A.P., SHREVEPORT, LA.

IN CONSIDERING the various factors which influence the development and health of the dental structures, one frequently encounters, not only among the laity, but also in professional groups and literature, two conceptions: (a) there is a marked racial resistance or susceptibility to dental disease; (b) all prehistoric or aboriginal peoples had good teeth, dental disease appearing only with the advent of civilization. Very few of these opinions are based on careful objective findings, although an unparalleled opportunity exists for the study of dental structures in the pre-Columbian American Indian, where we have the picture of racial unity under widely varied conditions of geography, social organization, and food habits. This opportunity is enhanced by the increasing number of carefully controlled archaeologic, ethnographic, and anthropologic studies which associate the skeletal material with the conditions under which the individuals lived. Such studies should afford considerable aid to the nutritionist, the dentist, the pediatrician, and others primarily interested in the optimal development of the growing human organism.

There is no doubt that dental caries, the most obvious abnormality of the teeth and, therefore, observed and recorded most frequently, has progressively increased with the advent of civilization. Krogman[1] in his study of the role of urbanization in the dentition of various population groups, records the percentage of individuals showing caries as follows:

European Stone Age	3 per cent
French Neolithic	2 per cent
Early Egyptian	10 per cent
Protohistoric Iranian	50 per cent
European Bronze Age	22 per cent
European Iron Age	40 per cent
Romano-British	32 per cent
English Anglo Saxon	15 per cent
Prehistoric Eskimo	6 per cent
Prehistoric American Indian	12-75 per cent
	average 30 per cent

Dental decay is seen even in the Neanderthal man; Homo rhodesiensis (50 to 100 thousand years ago) had eleven carious teeth out of fifteen still present in the maxilla.

Also of general interest is Krogman's[2] compilation of tooth mutilation in primitive peoples, the evulsion of teeth in neolithic times in Europe, Palestine, Africa, Iran, and Japan being generally interpreted as a puberty ceremony in males.

Presented before the twenty-fourth annual meeting, Southwestern Society of Orthodontists, Shreveport, La., March 1, 1944.

Among the American Indians, prehistoric tooth mutilation had its center in the Maya area of Yucatan, diffusing to the Totonacs, Huastecas, and Zapotecs of Mexico, also to some extent over South America. It was absent in the United States area. De la Borbolla[3] differentiates twenty different types of tooth mutilation, including evulsion, filling, and inlaying. The upper incisors were more frequently involved and inlayed materials included jadeite, obsidian, pyrites, hematite, turquoise, quartz, crystal, and gold. These practices probably combined religious and cosmetic motives.

In many tribes, interest in teeth was exhibited by the wearing of perforated animal or human teeth as ornaments. Human skulls and jaws are found as burial trophies in the Hopewell type mounds of Ohio, Indiana, and Illinois, the jaws often bearing multiple perforations.

Early manuscripts from Mexico[4] describe certain types of dental therapy which indicate the frequency of dental infections. Toothache was treated by dropping burning copal on the offending tooth or by grinding a certain kind of maggot with fir resin, applying the mixture to the gum. Then a red pepper or capsicum pod was heated and pressed with a grain of salt as tightly as possible against the painful spot. If this failed, the gum was lanced and an herb applied. Other measures failing, the tooth was pulled and salt inserted into the cavity. The Mayas lanced infected gums by piercing with the bill of the woodpecker.

The Aztecs removed tartar by rubbing the teeth with powdered carbon and washing with salt water. Tartar also was chipped off and the teeth subsequently rubbed with a mixture of alum, cochineal, salt, and red pepper.

Proceeding to examination of skeletal material, now numbering thousands of specimens from many areas of the Americas, we find certain general features which characterize the dental structures of the Amerind. The most distinctive tooth character in the New World, according to Wissler,[5] is the shovel-shaped or ventrally concave upper incisor. Hrdlička,[6] states that frequencies of this character are: white, 6 per cent; Negro, 10 per cent; Hawaiian, 47 per cent; Chinese, 60 per cent; Japanese, 85 per cent; American Indian, 91 per cent. It is interesting to note that this Mongoloid trait dates back one million years to Sinanthropoid skeletons found in caves near Peiping, China.

Another general characteristic is the cusp pattern of the molars. Sullivan[7] notes that approximately 75 per cent of American Indians show five cusps on the lower molar teeth, as compared with 35 per cent in the Negro and 2 to 6 per cent in the white race.

Hellman[8] has recorded comparative observations on the bite, stating that Indians and Eskimos generally have edge-to-edge bite; Mongolians tend to overbite, as do Hindus and white Americans to a lesser degree.

Wissler[5] states that present data, both human and mammalian, indicate that shovel-shaped incisors, five-cusped molars, and edge-to-edge bite are the more primitive or older tooth characters.

Although many variations in size and shape of the dental structures are seen in the aboriginal American, Hrdlička[9] states that in general, the teeth are of moderate size, the canines not excessively large, the molars about the same size as in whites, with the third molar usually present in adult life. The

usual cuspid formula is 4-4-3 above; 5-5-irregular below, although many variations occur.

Hrdlička also reports that the face is mesognathic or orthognathic; the upper, and occasionally the lower, alveolar processes showing in both sexes a degree of prognathism greater than the average in whites but less than in the Negro. The lower jaw varies greatly. The chin is of moderate prominence, occasionally high, sometimes square, and often appearing less prominent than in whites, the latter effect being due to the greater alveolar protrusion. Prominence of the mandibular angles in full-grown Indian males is not infrequently pronounced.

Careful measurements made by competent anthropologists[10-16] are available to demonstrate sizes of the dental structures of nearly a thousand prehistoric Indians from thirty archaeological areas in the United States.

The palatal length varies in these series from 51-2 to 57.5 mm. in the adult male, with an average of 54.6 mm.; in the female, 50.8 to 56.5 mm. with an average of 52.8 mm. The palatal breadth in the male varies from 61.4 to 69.1 with over-all average of 65.6 mm.; in the female, from 60.6 to 69.6 with an over-all average of 63.9 mm. The palatal index varies from 116 to 129.2 in the male, with a general average of 120.6; in the female, the index varies from 115 to 134.6, with a general average of 121.6. As pointed out by Hrdlička,[10] this shows that the American Indian generally had a slightly broader palate or alveolar arch than the average European white, for whom he records an average palatal index of 116.2 in the male and 115.6 in the female. In describing dental structures of the Delaware or Lenape Indians of the East Coast, Hrdlička[10] noted that the dental arches are regular; the palatal outline elliptical in most instances, ovoid in few, and parabolical occasionally. Among the Shell Mound Indians of the Pickwick Basin on the Tennessee, Newman and Snow[13] find that the palates are of medium height, parabolical to elliptical in outline, with small or absent torus palatinus.

The mandible varies considerably among the several Indian groups. The bicondylar breadth ranges from averages of 115 to 130.3 mm. in the male, with over-all average of 124.5 mm.; in the female, from 113 to 122 mm., with over-all average of 117 mm. The bigonial breadth is 93.5 to 109.8 mm. in the male, with general average of 104. mm.; in the female, 94.3 to 98.5 mm., with general average of 96.7 mm. The symphysis height varies from 33.4 to 37.5 mm., with general average of 35.9 mm. in the male; in the female, the variation is from 30 to 35.1 mm., with general average of 32.9 mm. The minimal breadth of the ascending ramus varies from 33.7 to 37.8 mm. in the male, averaging 34.8 mm. for the entire series; from 30.1 to 34.4 mm. in the female, with general average of 32.6 mm. The mandibular angle is more acute in the male Indian than in the female or the average white, ranging from 114.8 to 120 degrees in the series, with over-all average of 117 degrees; in the female, the range is 117 to 130 degrees, with over-all average of 123.5 degrees, while Morris' *Anatomy* states that the general male average is 122 degrees.

Heavy mandibles with square chins were found in Illinois burials,[15] especially in the Middle Mississippi type sites, but massive jaws are not the general rule for the Amerind.

Congenital abnormalities are not infrequent in skeletons of the prehistoric Indian. Supernumerary teeth are not uncommon, especially a conical form appearing in the upper jaw between, in front of, or behind the middle permanent incisors (Fig. 4). Congenital absence of teeth is noted fairly often. In one group of fourteen skulls from the Delaware,[10] three had congenital absence of a tooth, the third left upper molar in two instances, the left lower lateral incisor in the third. Rudimentary, fused, and rotated teeth are mentioned by several observers. Corlett[4] reports that skeletons from Peru showed infrequent supernumerary teeth and impacted teeth were not very common. Retention of the deciduous teeth occurred and in almost every case caused a disturbance of one or more incoming permanent teeth. Early loss of teeth, either accidental or resultant from disease, produced asymmetry of the dental arches in many instances. Funkhouser[11, 12] records irregular occlusion as common in the material from the Wheeler and Norris basins of the Tennessee River, the usual type being a projection of the lower maxillary so that the inner surface of the lower and outer surface of the upper incisors were much worn.

With respect to acquired abnormalities in the Amerind, Krogman[17] enumerates caries, alveolar abscesses, alveoloclasia, periodontitis, hypoplasia, and calculus deposit. He tabulates the percentages of adult dentitions presenting one or more carious teeth: Pecos, 47.9 per cent; Lenape, 12 per cent males, 16 per cent females; California, from 12 per cent to 36 per cent in the various tribes; Kentucky, 30 per cent; Sioux, 12 per cent; Zuni (Pueblo), 75 per cent; Wisconsin, 21.7 per cent males, 33.8 per cent females; Peru, 35 per cent; Canada, 17 per cent; New York, 90 per cent.

Funkhouser[11] states of the Wheeler Basin skeletons: "Various types of pyorrhea were apparent. The commonest form seemed to be an alveolar periodontoclasia generally found at the bases of the incisors and canines. Premolars and molars often showed serumal calculi in which, in addition to the breaking down of the bony edge of the mandible, a considerable calcareous deposit had accumulated in the region of the gum line. Caries of all sizes, shapes and conditions were extremely common."

In his report of the Norris Basin material, the same author[12] states: "The teeth are in general in bad condition, worse than those of the average civilized man of today. In spite of the common notion to the contrary, it is evident that these primitive people had as many and as varied troubles with their teeth as do the civilized races. Pathologic conditions in the teeth are extremely common and represent most of the diseases and malformations found in modern man."

Wakefield and Dellinger[18] found of the Ozark bluff dwellers that the teeth were badly worn early in life, with frequent caries, alveolar abscesses, and osteomyelitis of the jaws. Similarly, among the mound builders of the lower Mississippi Valley, they report frequent osteomyelitis in the region of the dental sockets.

According to Moodie,[19] "An absorptive, alveolar osteitis was responsible for great changes in the teeth of ancient Peruvians. Loss of teeth was very common and numerous edentulous palates occur. A high percentage of the ancient population lost their teeth at an early age, before 40 years at least.

Part of this loss is to be attributed to alveolar abscesses, but the greater part was due to that complex series of changes commonly called pyorrhea alveolaris." In an examination of 329 skulls from Peru, Leigh[20] reported that 35 per cent had one or more carious teeth, that periapical osteitis was not uncommon, and that more than 10 per cent of individuals over 40 years of age had fistulas into the maxillary antra. Hrdlička[21] examined over 8,000 Peruvian skulls, finding caries to be infrequent in the Chicama valley, but very common on the seacoast.

Scrutiny of the various reports indicates two etiological factors, attrition and diet—often interrelated—which apparently were active in the causation of the varying degrees of dental pathology evident in the different tribes or regions. Corlett[4] presents some interesting data from Pecos, relating to attrition. Nearly 98 per cent of the teeth showed excessive wear, which he thinks was undoubtedly due to the grit which came from the stones used to grind corn, and from their consumption of large quantities of rough and raw vegetables and fruit foods. Forty-eight per cent of the adult teeth also showed caries, mostly in the molar region, and pyorrhea was present in 59 per cent of the cases.

Of the Wheeler and Norris Basin skeletons, Funkhouser[11, 12] states that by far the most noticeable condition is the great abrasion shown in practically all of the teeth of adults. By the time the individual had reached middle life the teeth had become so worn that the cusps had often disappeared and the enamel had been lost from the whole surface.

In the Pickwick Basin report, Newman and Snow[13] compare the dental pathology of an early Shell Mound group with that of a later agricultural group. Tooth wear was definitely more pronounced in the Shell Mound series, but the incidence of caries was less. Correlated with the greater amount of wear was a higher percentage of edge-to-edge bite, also less crowding in the dental arcade and a higher incidence of dentures without ante-mortem tooth loss. They attribute some of these differences to dietary habits, presuming that the Shell Mound population was a nonagricultural fishing and hunting people comparable in their economy to many other North American Indian "food gatherers." The dense mounds of discarded shells indicate that bivalves made up a considerable part of their diet, and the authors state "mussels and the like would appear to be rather gritty fare, and should produce tooth wear comparable to that of western agricultural groups who ground maize in stone metates and hence had a lot of grit mixed with their food." The later agricultural people of the Southeast ground their corn with wooden mortars and pestles, also had the advantage of the bow and arrow for hunting of larger game animals, and thus experienced a lesser degree of dental attrition.

Leigh[22] studied craniums from several Indian tribes in an attempt to correlate dental disease with the types of food eaten. Among the Zuni, almost entirely agricultural, caries occurred in 75 per cent, alveolar abscess in 52 per cent, and pyorrhea in 56 per cent. The Kentucky Indians, a sedentary group living under conditions similar to the Shell Mound series, showed considerable wear, many alveolar abscesses, some caries and pyorrhea. The Arikara, partially sedentary but also bison hunters, showed similar findings. Among the Sioux, who were predominantly bison meat and organ eaters, there was relatively little attrition, few examples of caries or alveolar abscesses, and pyorrhea occurred in only 13 per cent of the craniums.

He states of the Kentucky group: "The writer has never seen lesions of attrition so generalized, developed so early in life, and with such far-reaching pathological results as in the crania of these Kentucky people. Over 50 per cent of the dentures exhibit third to fourth degree wear. In all, there are one hundred forty-eight pulp exposures through attrition with an equal number of periapical osseous lesions resultant from pulpal necrosis. Were it not for the fact that teeth usually form secondary dentine on the pulp chamber well subjacent to the wearing surface, there would be more teeth with pulp exposures. . . . Nor was pulp exposure with consequent abscess the only deleterious effect of attrition. When the teeth became worn beyond their convexity, the approximal contact was removed and open diastemata presented, with consequent impaction of food; the latter, in turn, brought about inflammation and atrophy of the supporting alveolar tissues, as well as a tendency to initiate dental caries at the cervix. . . . Caries is infrequent in the teeth of the Kentucky tribe. . . . There are no cases of caries in children or young adults, but the few lesions occurred in persons well advanced in life. This localization and period of occurrence justifies the appellation senile caries." He suggests the possibility that, in addition to food abrasives, these peoples chewed some habit-forming substance similar to the coca leaf quid of the Peruvians.

Krogman's surveys,[23] both among the American Indians and world-wide groups, indicate that peoples who subsisted on the basis of a hunting, fishing, and gathering economy had less dental disease than the highly agricultural peoples, whose food dependence was on cereal grains. As civilization advanced, progressively increasing amounts of refined cereals and other carbohydrate foods appeared in the dietary.

Price[24] has carefully analyzed the foods of the primitive Eskimos and Indians, who showed only 0.01 to 0.02 per cent of carious teeth, as compared with the foods of the same peoples who lived in contact with civilization, where the incidence of caries increased to 13 to 50 per cent. The primitive Eskimos lived on salmon, seal oil, sea animals, caribou, and small amounts of plants and roots; the primitive Indians on flesh, organs, and bone marrow of game, again with minimal amounts of vegetable substances. Those who were near the trading posts ate relatively large amounts of bannock bread and sugar or sweet foods.

Suggestive in this regard is the research work of Bunting and his associates[25] at the University of Michigan, who state that soundness of the teeth is relatively unimportant in the production of caries. Instead, they find a high correlation between the height of the counts of the *Lactobacillus acidophilus* and the activity of caries. They think that the caries-producing role of high carbohydrate diets is due to the production of conditions wherein this organism flourishes.

DENTITIONS FROM PREHISTORIC LOUISIANA INDIANS

Excavations during the past ten years in two Indian mound sites in the Red River valley of northwest Louisiana have produced skeletal material for study. In neither instance was there evidence of contact with white civilization.

From the Belcher mound, in Caddo Parish, thirty skulls were sufficiently well preserved to be studied. Profuse burial placements identified the group as protohistoric Caddo Indians. Records of the early Spanish and French explorers indicate that the Caddo tribes of this area had settled habitations with well-developed agriculture which formed the basis of their subsistence, although the active pursuit of hunting and fishing added to the variety of food materials. Materials secured during our excavations (Table I) substantiate the early narratives as to the variety of food sources.

TABLE I

EVIDENCES OF FOOD, BELCHER MOUND

VEGETABLE FOODS	ANIMAL FOODS	
Corn	Deer	Birds
Beans	Bear	Turkey
Walnut	Squirrel	Fish
Hickory nut	Rabbit	Turtle
Pecan	Raccoon	Shellfish
Persimmon	Bone marrow	

Of the 30 dentitions from Belcher available for study, 3 are those of newborn infants, 8 are of children under twelve years of age, 8 are of adolescents (12 to 20 years), and 11 are of adults. Where sex could be reasonably well identified, there were eight each of male and female, although positive identification was sometimes difficult when the skulls were badly crushed.

General development of the dental structures* is good and the symmetry usually is excellent (Figs. 1 and 2). The jaws and teeth are about average in size, none being classed as massive. "Shovel-shaped" maxillary incisors (Fig. 1) are almost universally present. Five-cusped molars appear often in the mandibular sets (Fig. 2). Moderate overbite due to maxillary prognathism is present in some of the younger individuals, but wear in the adults is generally uniform, with edge-to-edge bite. All of the adults show considerable attrition (Figs. 4, 6, and 7), which by middle adult life had worn entirely through the enamel. Heavy deposits are present on all of the adults' teeth.

Where all teeth are retained, occlusion is generally good (Figs. 3 and 6), but early loss of teeth resulting in drifting and altered occlusion is noted in seven instances. Five of the mandibular sets show crowding of the incisors (Fig. 3), and elongation of teeth due to loss of antagonists occurs twice.

Congenital defects are frequent. A supernumerary tooth in the maxillary incisor region (Fig. 4) occurs twice, and congenital absence of the left lateral maxillary incisor is noted in a third specimen. Small malformed lateral upper incisors are noted bilaterally in two dentitions, and malformed first upper premolars occur once. The two left lower incisors in an individual of 15 to 18 years are unerupted and apparently impacted. The roots of the second and third molars are fused in several instances. Small second and third molars are not infrequent. Although many of the adult dentitions exhibit third molars, in others these teeth have not erupted or have been lost early in life. Torsion of the mandibular third molars is noted in one set.

*I am indebted to Major Walter T. Colquitt, D.D.S., formerly of this city, for dental examinations of the majority of these specimens and for advice and assistance with the entire study.

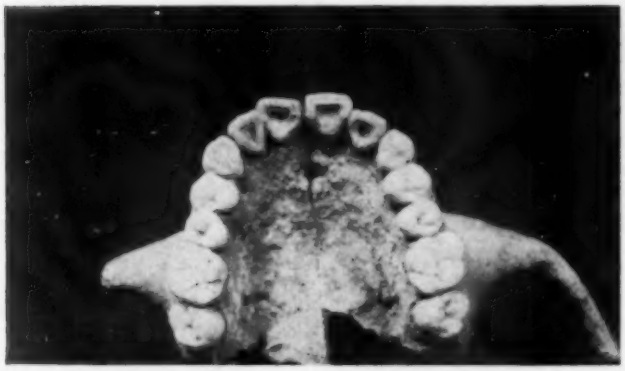

Fig. 1.—Maxillary teeth of individual 18 to 20 years of age from Belcher site. Note symmetry and development, shovel-shaped incisors, slight wear, pits on second molars, unerupted third molars.

Fig. 2.—Mandibular arch of adult female from Belcher site. Note symmetry and normal spacing; moderate wear, five-cusped molars, absence of caries.

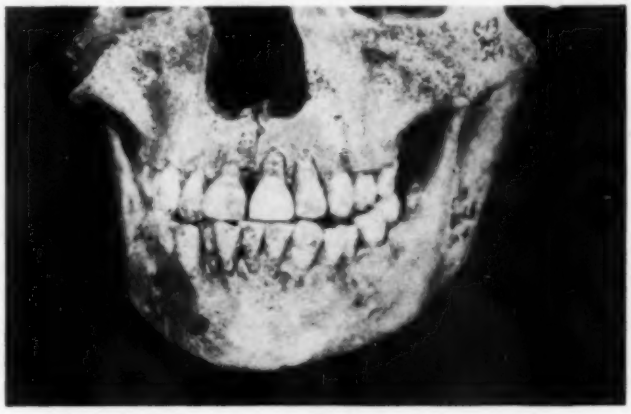

Fig. 3.—Dentition of young adult from Belcher site. Note crowding of lower incisors, beginning deposit on teeth, absence of caries.

Pits of various sizes are present on the buccal or occlusal surfaces of a number of molars and in some instances have been attacked by caries. Deep grooves or bands of poorly developed dentine across the anterior surface of the incisors are present in three dentitions (Fig. 5), involving the upper central incisors in two cases, and the first mandibular cuspids in the third. These are due either to a congenital defect or more likely to a severe nutritional disturbance or illness early in life.

Fig. 4.—Maxillary arch of adult from Belcher site. Note supernumerary tooth, considerable attrition, caries of right premolars with loss of crowns, loss of third molars.

Fig. 5.—Dentition of adult female from Belcher site. Note early loss of left upper central incisor with drift of adjoining teeth, malnutritional groove on right upper central incisor.

Ante-mortem loss of teeth occurred in 14 of the 30 individuals with a total of 82 teeth lost. Two adults, apparently advanced in years but not senile, had lost 23 and 16 teeth respectively. Many of these were apparently lost as a result of disease rather than of violence.

Caries is present in a total of 82 (12 per cent) of 688 teeth available for study and in 21 (70 per cent) of the 30 individuals. Even in the sixteen individuals between 1 and 20 years of age, only five were free of caries. Among the adults, the infections are advanced (Figs. 6 and 7). Cervical caries often caused loss of the entire crown (Fig. 4). Over half of the adults had sinus pockets, apical abscesses (Fig. 6), pyorrhea, osteomyelitis, or other severe complications. A description of several dentitions will afford an idea of the extent of the disease processes.

Fig. 6.—Skull of adult male from Belcher site. Note occlusion, second-degree attrition, carious third lower and first upper molars with alveolar abscess.

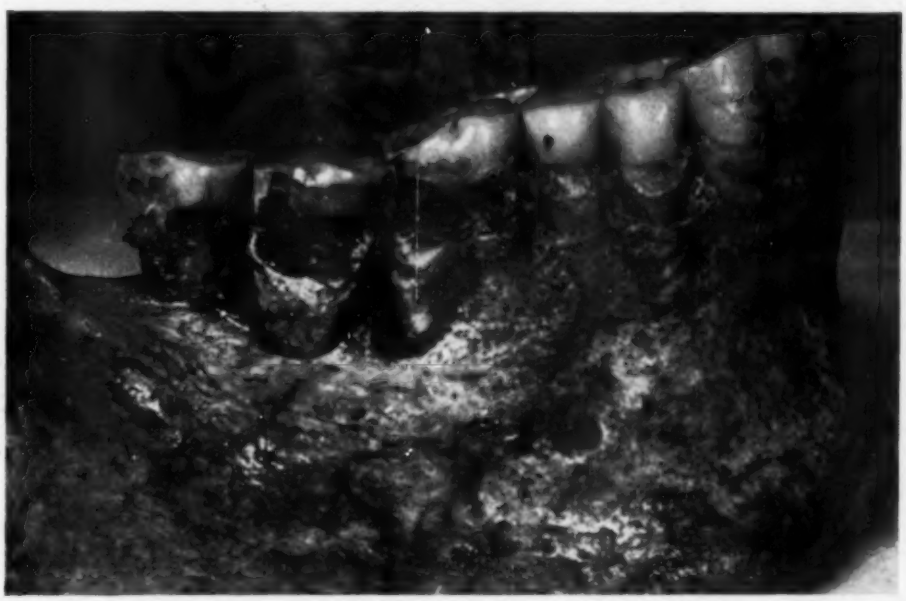

Fig. 7.—Mandibular teeth of adult male, Belcher site. Note advanced cervical caries of molars, marked attrition, deposits, pyorrhea.

C13-11-3. Child, aged approximately 9 years.

The occlusion is normal, very little wear is evidenced, and there are practically no gingival deposits. Deep rings in the enamel around the upper central incisors indicate a severe nutritional injury at about 2½ years of age.

The upper left first deciduous molar is completely missing and was obviously lost very early as the cuspid has drifted distally into the space. The corresponding tooth on the opposite side is decayed to the extent that only a thin shell is left.

The lower left second deciduous molar has advanced decay and its approximating first molar has been attacked by caries on its mesial surface. The corresponding deciduous molar on the opposite side has the crown completely decayed away, leaving only the roots and a fragment above the bone.

C13-12-2. Adult male, aged about 25 years (Fig. 6).

This is one of the best adult dentitions in the Belcher group. All teeth except the third molars show considerable wear. Gingival deposits are light. However, there are deep buccal cavities in both of the mandibular third molars. There is a deep cavity in the mesial aspect of the upper right first molar which involved the pulp, causing its death and a subsequent apical abscess, which resulted in a sinus and fistula through the buccal plate (Fig. 6).

Fig. 8.—Skull of adult male from Gahagan site, showing excellent dentition with considerable attrition.

Both left upper premolars are congenitally malformed, the crown of one being missing. The upper left third molar is missing, with a subsequent elongation of its lower antagonist.

C13-11-5. Adult female, advanced age.

In this, as in all specimens studied, the development of the arches is normal. The crowns of the teeth have almost worn off, and, while the upper jaw presents a dentition practically intact, the lower has suffered severely from both caries and pyorrhea.

The only maxillary teeth attacked by caries are the second premolars. In the mandibular area, however, there is advanced caries in the second premolar and first molar on the left, in the first premolar (crown gone), second premolar, and second molar on the right. The radiographs show that four of these teeth have apical rarefications due to the death of the pulps from caries.

There is also advanced pyorrhea, the bone having been completely destroyed around the lower right third molar, causing its exfoliation, and the alveolar destruction around the second molar is almost as severe. The condition on the left side is essentially the same.

THE GAHAGAN SITE

From a second mound site at Gahagan, Red River Parish, Louisiana, two burial groups produced ten skeletons, of which eight were adults, one adolescent, and one child. Study of the associated artifacts indicates that this group antedates the Belcher site considerably, possibly one to two hundred years. Food habits are not definitely indicated, although maize cultivation may not have advanced to the degree reached by the later Caddo tribes.

The poor preservation of the skeletal material obviated detailed study. However, only two dentitions presented caries, several showing perfect sets of teeth without ante-mortem tooth loss, despite moderate attrition. The one well-preserved skull (Fig. 8) is that of an adult male, exhibiting perfect dentition. Only one adult showed the severe caries with apical abscesses and alveolar involvement which were so prevalent in the Belcher group.

CONCLUSIONS

1. The aboriginal American Indian showed, in varying degree, the same types of congenital and acquired dental defects found in modern man.

2. Distinctive dental characteristics of the American Indian are broad arches, shovel-shaped upper incisors, edge-to-edge bite, and five-cusped molars.

3. The native or aboriginal state of existence does not automatically insure freedom from dental disease.

4. Food habits and dietary factors appear to be of paramount importance to dental health, whether among aboriginal or civilized peoples.

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REPORT OF A CASE EMPLOYING THE JOHNSON TWIN-WIRE MECHANISM

DAN C. PEAVY, D.D.S., SAN ANTONIO, TEXAS

THIS case is not being reported with the view of presenting a case of unusual malocclusion, or unusual result, but rather with the idea of showing that by employing the use of the twin-wire mechanism, it was possible to obtain, with comparative ease, a satisfactory functional relationship and a pleasing esthetic effect. The twin-wire mechanism fills an important part in my practice. I do not use it exclusively, nor in the true orthodox manner as prescribed by Dr. Johnson. I use it with many variations and modifications and in combination with all types of other appliances. I do not believe that we should attempt to fit each case to any one particular appliance or technique, but rather we should select appliances or combinations that will be best suited to the case at hand.

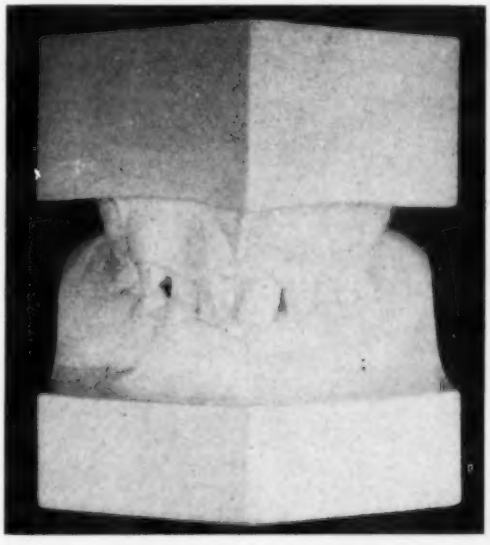

Fig. 1.

The patient, a girl, aged 12 years, 2 months, had been a full-term, breast-fed baby. She was subjected to the usual childhood diseases. Tonsils were removed one year previous to treatment. She had enjoyed excellent health and was physically active and well developed.

Gnathostatic diagnosis revealed the following anomalies: Fig. 1, a front view of the casts, shows the extreme amount of overbite, almost completely covering the lower anterior teeth, which were biting into the soft tissues. Note the position of the upper lateral incisor which has the impacted left cuspid across the labial surface of the root. The upper left deciduous cuspid is

Read before the Southwestern Society of Orthodontists, Shreveport, La., March 1, 1944.

Fig. 2.

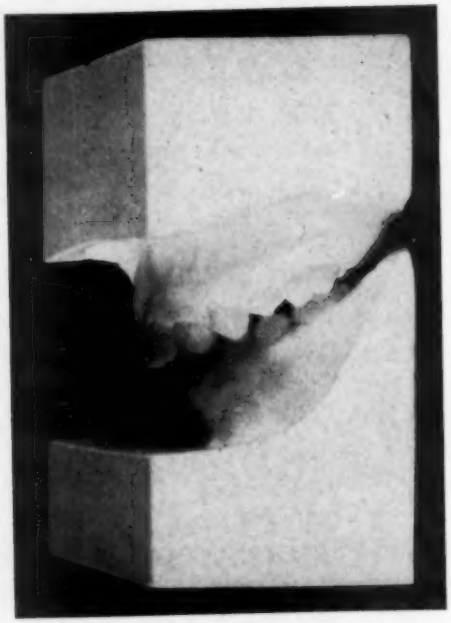

Fig. 3.

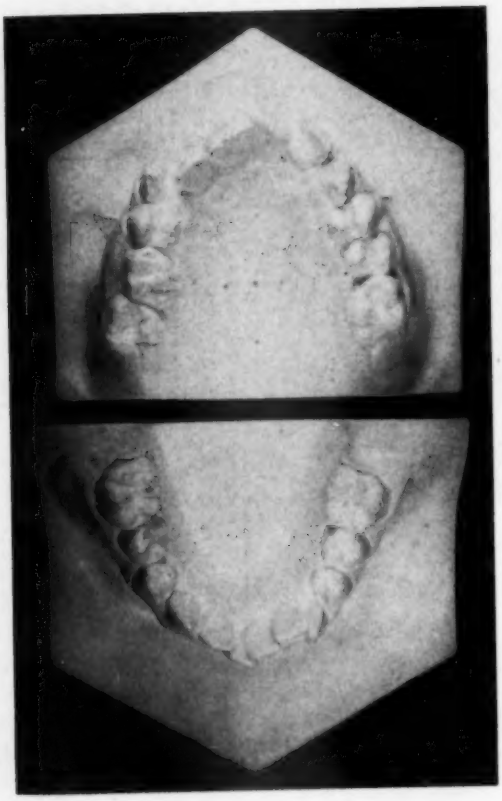

Fig. 4.

retained. Fig. 2, the right side, shows the distal relationship of the mandible and the retained second deciduous molar. Fig. 3, the left side, shows the distal relation of the mandible and the retained deciduous cuspid. The embedded permanent cuspid is too deep to show any surface prominence on the model. In Fig. 4, the occlusal view, the upper model shows the orbital plane passing through the central incisors. The transverse plane across the palate shows the position of the left molar to be considerably mesial to that of the right first molar. The lower model shows dental contraction of the arch and buckling of the anterior teeth. Fig. 5, the original x-rays, shows the impacted upper left

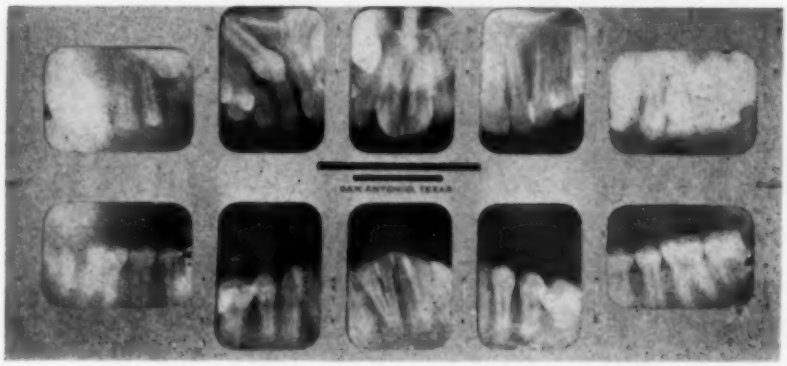

Fig. 5.

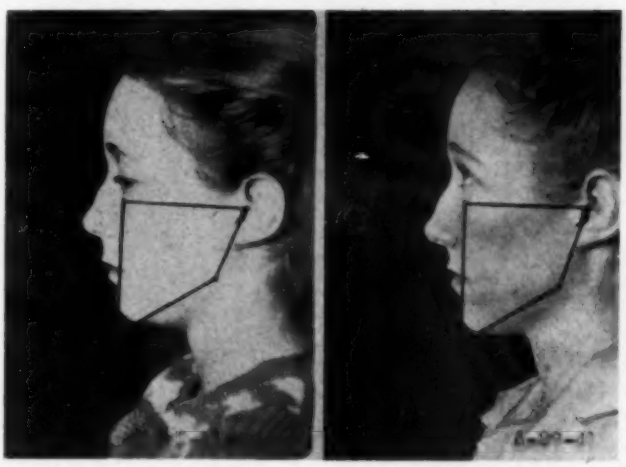

Fig. 6.

cuspid and retained upper left deciduous cuspid and upper right deciduous second molar. Fig. 6 shows the photostatic pictures made before and after treatment. Fig. 7 is the gnathostatic chart of the case. The heavy black lines of the transverse palatal, sagittal, and occlusal curves represent the case at the beginning of treatment and the dotted lines represent the case at the end of treatment. In the graph in the upper right corner, the longer vertical lines above the horizontal lines represent the norm for the case. The short vertical lines above represent the case at the beginning of treatment and the short lines below the horizontal show how closely we approached the norm

with treatment. The occlusal curve graph shows the large angle the occlusal curve makes with the horizontal, 17 degrees on the left side, and 15 degrees on the right. The heavy line shows the extreme overbite, and the dotted line the result of treatment.

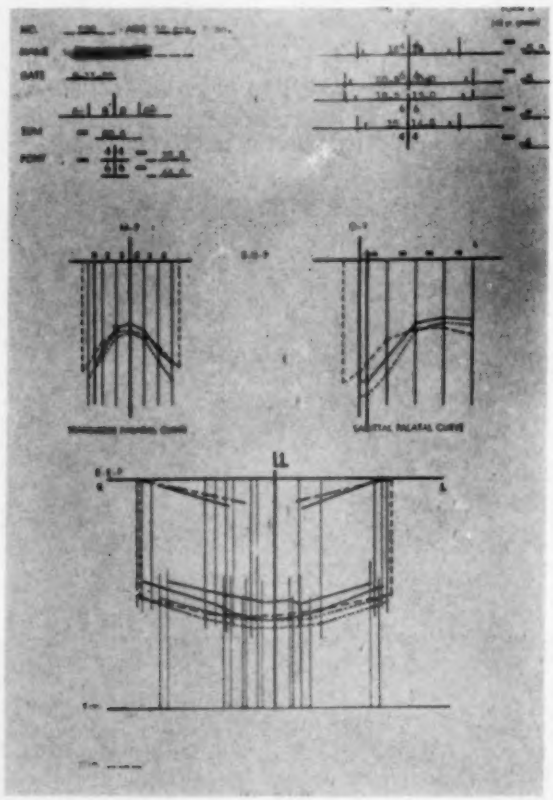

Fig. 7.

Treatment.—First molars banded; 0.036 gold lingual arches added and symmetrical lateral expansion started with 0.020 gold finger springs. Deciduous upper right second molar extracted. Upper central and lateral incisors banded with Angle edgewise brackets. Upper 0.022 labial arch, stepped up to 0.036 distal to the cuspids and with 0.022 loop stops, anterior to 0.036 buccal tubes. An 0.025 basket guard was soldered over the impacted cuspid area with an 0.020 finger spring soldered from the guard. Flap operation to expose impacted cuspid, the crown of which was labial to the arch, and tightly wedged in the embrasure between the left central and lateral incisors, in contact with the root surfaces of both. This precluded the possibility of banding, or capping the cuspid, so a tiny hole was drilled partially through the enamel on the labial surface, near the tip of the cusp and distal to the ridge. A small threaded eyelet was cemented to place, and an 0.008 chrome wire was laced through the eyelet and the tissue of the flap at a point that would be directly over the eyelet when the flap was sutured in place. The ends of the chrome ligature were tied passively to the labial arch until healing took place. It was then attached to the finger spring, which was adjusted to lift the crown of the cuspid labially from the embrasure before starting distal movement to avoid injury to the

Fig. 8.

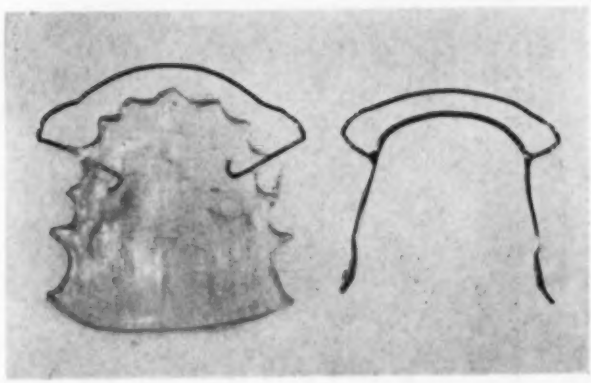

Fig. 9.

Fig. 10.

Fig. 11.

root of the lateral incisor. Direction of force being applied to the cuspid was altered as needed to accomplish labial, then distal, movement. The cuspid erupted through the gum tissue at about the point where a high cuspid would erupt. The case was now at the stage shown by Fig. 8. No lower labial arch was used until now. At this point the lower anteriors and upper left cuspid

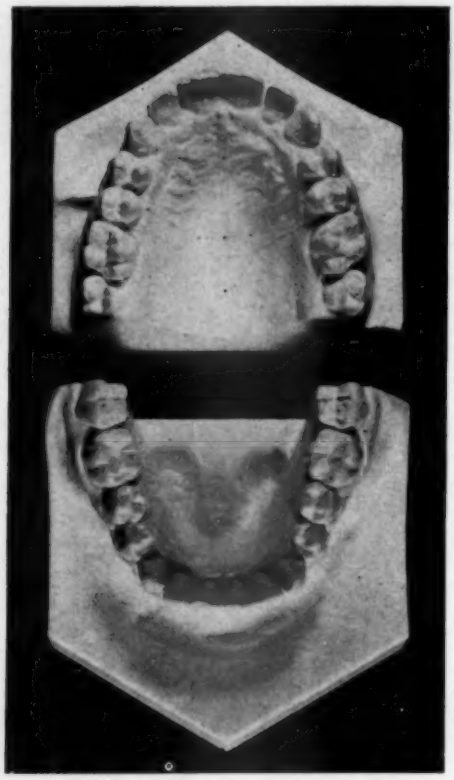

Fig. 12.

Fig. 13.

were banded with Angle edgewise brackets, and upper and lower twin-wire arches were added, using 0.022 gold loop stops anterior to buccal tubes, upper and lower. The upper left cuspid was first ligated to the arch to approximate bracket alignment. Then one wire was placed in bracket and finally both. The lower twin arch rested well below the brackets before snapping into place. At this point, the patient, who lived out of town and at a considerable distance, had the misfortune to sustain a broken neck in an accident, and it was several

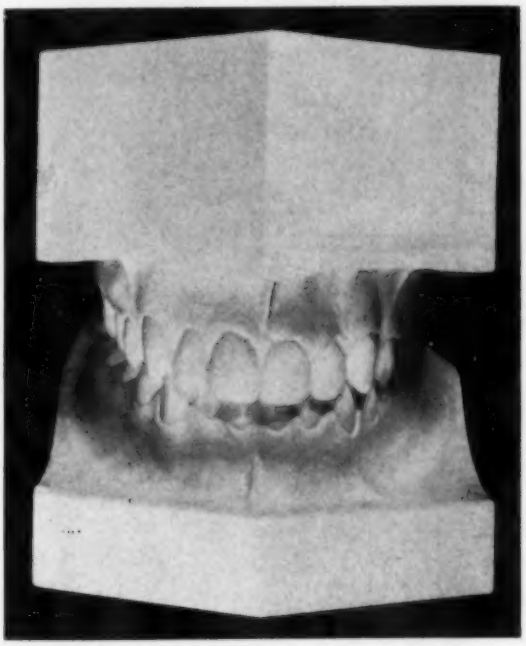

Fig. 14.

Fig. 15.

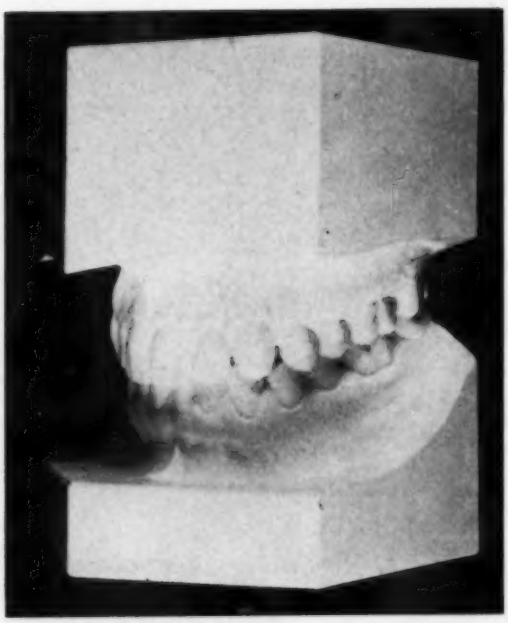

Fig. 16.

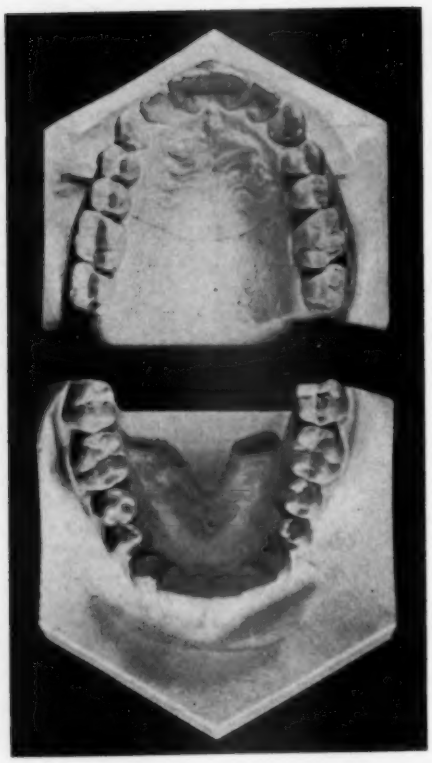

Fig. 17.

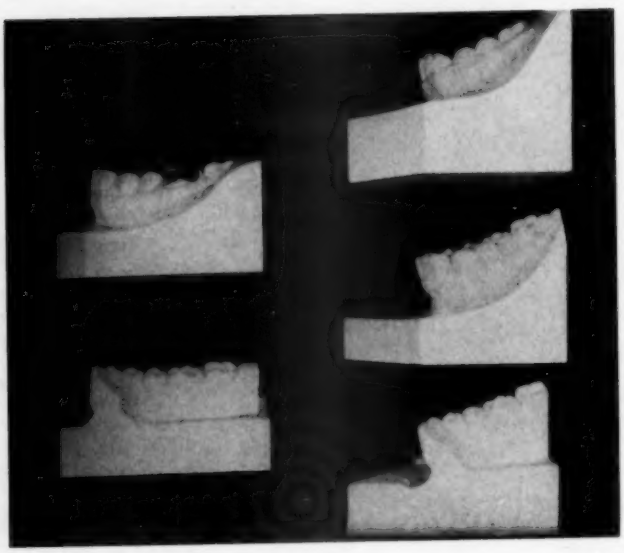

Fig. 18.

months before she could again make the trip to the office. For a considerable time thereafter I was only able to take care of emergencies as her head was still supported in a steel and leather cradle, preventing her opening her mouth to any degree. The twin-wire hookup was used to finish the case. Appliances were removed and an upper retainer of the Hawley type placed (Fig. 9). On the lower, a lingual arch was adapted to the lingual surfaces of the teeth and a Hawley type loop soldered to this. The results of treatment are shown in Figs. 10, 11, 12, and 13. Note the amount the bite has been opened, and that the transverse palatal line now intersects both first molars at the same point. The spaces left between the anterior teeth after removal of the bands closed themselves within a few days. Figs. 14, 15, 16, and 17 are models made of the case three years after appliances were removed.

Fig. 18 is a composite picture of the lower models. The upper right is the original model. The other models were made from hydrocolloid impressions, all taken within the same hour. The two left models were trimmed parallel with the occlusal plane of the teeth. The middle and lower right models are "oriented" or gnathostatic models. A study of these will tend to show some of the optical illusions you are apt to get when depending on models alone to determine the so-called "on the ridge," or "mounted upright on basal bone," relationship of the lower anterior teeth.

746 Milam Building

A TIMESAVING IDEA REQUIRING BUT ONE IMPRESSION FOR RECORD MODEL, BAND TECHNIQUE, AND APPLIANCE CONSTRUCTION

D. P. Comegys, D.D.S., Shreveport, La.

BEFORE the war, most orthodontic impressions were taken either in modeling compound or one of the hydrocolloidal materials. Since most of these latter materials are no longer attainable, several companies have manufactured a colloidal powder as a substitute. I think these newer materials are more suitable to orthodontic needs than anything we have had heretofore. If there is any merit to the following technique, it is due to the properties of the material.

Upper and lower impression are taken and separating wires placed as needed during the first visit. An appointment is made, and both upper and lower appliances are placed on the second visit. I think heretofore the procedure at the second appointment has been to fit bands and take impressions with bands in place, and then construct appliances, having the patient come back a third time for placing. I believe this second step can be eliminated by use of the technique which follows.

Take a perforated tray, or any of your regular trays and punch a few holes around the periphery and in the palate. With an ordinary plaster bowl and spatula, mix the desired quantity of powder and water for about one minute, place in tray, carry to mouth and allow to set. I have found that, for orthodontic needs, about two minutes is generally a sufficient time to leave it in the mouth. An impression can be taken and removed in the time it would take to soften compound, not over four minutes from beginning of mix until removal from the mouth. The impression can be rinsed and placed in a pan of water and kept for weeks.

Now we are going to run several models from this same impression, and, with a little care, the accuracy will not be affected. I first run a record model in plaster. It can be snapped off safely within thirty minutes or as soon as the plaster has set. In separating, trim excess plaster away from tray, and carefully pull off. Then, I run a stone model for the working model and band construction, a third for the purpose of getting a model that can be cut from one side to the median line to give a side view of the tooth relation. I have also sometimes run a model to give to the child, and have found this good psychology in getting his interest and cooperation. This making of models from the same impression could go on practically indefinitely by keeping the impression in water when not in use. After a model is run, it should be separated before the impression is allowed to dry out. I have poured models in the afternoon, which I have separated the next morning, but I would not advise leaving the impres-

Shown before the Southwestern Society of Orthodontists, at Shreveport, La., February 28 to March 2, 1944.

sion out of water for over three hours if you contemplate its further use. It will keep several days if wrapped in a wet towel.

Now, on the stone model, the reproduction of the molar tooth to be banded is so accurate that, by trimming just below the gingiva and sawing between the teeth, staying away from the one to be banded, a fine fitting, properly contoured band can be constructed. For the saw, get a very small crosscut mechanical saw blade not much wider than the thickness of the band material, and saw out the stone in the interproximal space, staying away from the outline of the tooth. Of course, it makes no difference how much of the approximating tooth you destroy. The gingival line will be clearly outlined and anyone who knows tooth anatomy can, with a little attention to detail, carve around and beneath the gingival margin to approximately correct tooth form. It is wise to make your band hug close beneath the gingival area, for ordinarily the tooth gets smaller here. I use a curved beak inlay wax-carving instrument to cut around the gingival area. Before adapting band material, I run a sandpaper polishing strip around the tooth, making it smooth and perhaps a little smaller, and I find my bands generally require a little urging to go to place, which I think is desirable. I anneal the band material and pull it through the beaks of a pair of crown and bridge contouring pliers several times. This will put a good deep contour in the material, and it can be adapted to the tooth much better than if left flat. The band is adapted to the tooth, pinched, and soldered in the usual manner. In fitting it back to the stone model, you will find that the stone is hard enough to force the band into proper shape as you carry it to the desired position.

If you can trust the fit of the bands, I can see no reason not to go ahead and construct the appliances on the models. Some men prefer to lightly cement the bands to the model to prevent any movement. Of course, I am referring to plain labial and lingual appliances anchored to molar bands. Other additions to the appliance can be made directly.

Now, upon fitting the bands to the patient before placing the appliance, a little stretching sometimes affects the tube position; in such cases this can be corrected in a minute in the laboratory. Also, if there is a slight change in the alignment of the lingual after necessary stretching in fitting the bands, this can easily be corrected by placing bands and appliance back on model and applying heat. However, both of the above are extremely rare.

Thus, it will be seen that the technique eliminates the step of making bands at the chair and taking impressions with bands in place, enabling the operator to place appliances at the second appointment instead of the third. This is particularly worth while in the case of out-of-town patients.

Many operators take individual copper band impressions of molars for indirect band construction. Others take plaster impressions of the molar area and run in metal or stone, and carve to tooth form in another indirect technique. Both methods require four individual impressions of the molars to be banded. I believe the above technique can be used to eliminate these extra steps with their attendant consumption of time.

Perhaps this clinic could have been more aptly titled "Uses of the Colloidal Materials in Orthodontics." I will list a few advantages aside from the time consideration.

1. A beautiful and accurate reproduction of the tooth structure. The general profession is using this material for precision castings with very satisfactory results.

2. Utter simplicity; ease of separation; no boiling or heat of any kind either in preparing for impression or separating (merely pull it off after model has set).

3. Impression can be taken for acrylic bite plane without removal of bands if this therapy is desired as an adjunct to treatment already instituted.

4. Cost is negligible. The package can be divided into two equal parts, each of which is enough for one impression. In fact, I find that by using a small quantity I have no excess to speak of and this prevents gagging.

The operator can determine, from among several available products, which suits him best. The directions will give the proportion, and I might add that I have found that cutting down a little on the water content is desirable and will set quicker in the mouth. In mixing, when the powder is first incorporated into the water and spatulated a few seconds, the mass should somewhat resemble biscuit dough in consistency. Then, with about one minute's vigorous spatulation, it will evolve into a strong smooth-flowing mix.

Now, in conclusion, I wish to say that I think the majority of orthodontists have been using this material for some time, but there are still quite a number who may not be acquainted with its possibilities. I hope this little effort may serve to introduce them to something which I think they will like.

809 Kings Highway

THE MANAGEMENT OF AN ORTHODONTIC OFFICE

CLARENCE W. KOCH, D.D.S., LITTLE ROCK, ARK.

IN DISCUSSING "The Management of an Orthodontic Office," the phase of this symposium assigned to me, I plan to follow general principles rather than to take up your time with details of administration. All of you have your own pet methods of handling these details, so it would be pointless to pursue this angle, other than to recommend to you the paper by Dr. Floyd E. Gibbin, of Buffalo, New York, presented at the St. Louis meeting of the American Society of Orthodontists in 1937. He gave complete details of his methods, and they are very thorough.

Whatever your reaction may be to the philosophy I will attempt to present in this paper, I hope you will evaluate all statements in the light of common sense and understand that there is no intent to abrogate those charitable attitudes that are commonly ascribed to the true professional gentleman.

I believe all of us would like to have a good income. I believe all of us are willing to work honestly for our patients. But, I also believe that all of us, at times, pedal our bicycle furiously only to find, when we take the time to look up over the handle bars, that we are getting exactly nowhere, because the rear wheel has been jacked up.

A young man once found a two-dollar bill in the road. From that time on, he never lifted his eyes from the ground when walking. In the course of forty years, he accumulated 29,516 buttons, 54,172 pins, seven cents in pennies, a bent back, and a miserly disposition. He lost the glories of the sunlight, the smiles of friends, the songs of birds, the beauties of nature, and all there is in life worth living for—the opportunity to serve his fellowmen and spread happiness.

The hope of this paper is then: that we may pause in our pedaling and take a look at the rear wheel of our bicycle, and that, in the dispensation of our charities, we will give due consideration to the adage, "charity begins at home."

In the management of an orthodontic office, three objectives come to mind:

1. To render a maximum of service with a minimum of effort.

2. To provide sufficient leisure during the working day to ponder over the inherent problems of an orthodontic practice, and to contemplate possible avenues of improvement in our professional techniques.

3. To provide sufficient net monetary income to afford us the opportunity of postgraduate study, and to provide a standard of living for our families commensurate with our ideals, desires, and our station in life, not only for the present, but also for those years when we will brag about what men we used to be.

To render a maximum of service with a minimum of effort, the systematic operation of the office is essential. It is necessary that we start with clear-cut ideas of what we want to do and how we want to do it. We must then drive

Read before the Southwestern Society of Orthodontists, Shreveport, La., March 2, 1944.

ourselves to do it with proper dispatch. "Do not put off until the evening what the morning hours may accomplish," says an age-old proverb. It is so easy to put things off, in the practice of orthodontics. Even energetic men must guard themselves against this weakness. It is slow of detection, perhaps, yet nothing is more damaging to a practice than allowing the habit of putting off to take root. One of the reasons for putting off is that many of us dissipate our energies too much. We must realize that each of us possesses only a given amount of energy. If we succumb to all the flattering invitations to serve on this or that committee of sundry organizations, unless they relate to our profession, our ego may be pleasantly tickled, but our main purpose in life—the practice of orthodontics—will suffer to a corresponding degree. Our energy will be spread over too large an area to be effective in any sphere of activity. I know, because I was once one of the world's worst offenders. If we want to genuinely enjoy our practice, we must focus all of our energies on it. Those who doubt the power of concentrated energy should let the sun shine through a sunglass onto their hand.

Some, of course, will say we are shirking our civic responsibilities. In answer, I submit this question: Which is the greater asset to the community: a thoroughly competent and energetic orthodontist, or an orthodontist whose amateurish dabbling in politics and civic matters has caused him to sink to the level of a second rater? There are many other ways in which we can fulfill our civic responsibilities and yet not neglect our practice.

Energetic leadership should stimulate similar responses in our assistants. If it fails to do so, we have the wrong assistants. Assistants must get in step with the orthodontist. They must think with him. If they fail to do so, efficiency is reduced. We should not depend too much on our assistants, but keep in touch with every detail of our office. I failed to do this, and, when my assistant of seven years' standing left me recently on short notice, I was lost. It has taken me two months to restore my office to a semblance of system. A very successful business man once told me that when one of his employees seemed indispensable, he began looking for someone to replace him. Of course, he exaggerated somewhat, but his point is obvious and worth noting.

Another essential element to the efficient operation of an orthodontic office is promptness on the part of patients in keeping appointments. I feel it is my duty to make appointments at proper intervals for successful and expeditious treatment, but, having done this, I insist that appointments be kept, unless, of course, illness or something of considerable importance intervenes. This policy is thoroughly explained to both the parent and the patient in the very beginning of treatment.

Also, at this time, the booklet published by the Rocky Mountain Society of Orthodontists, entitled "Orthodontics," is given to the parent, who is urged to read it. I find that these booklets are most effective as they explain in a few minutes, more thoroughly and with more authority, the "dos" and "don'ts" of orthodontic treatment, than the individual orthodontist could explain in hours. I recommend this booklet to you, if you are not already using it.

You may not find it so, but, to me, one of the most irritating obstacles to rendering maximum service with minimum effort is broken appliances. I

generally do not make a charge for repairing appliances, but occasionally a patient is so persistent in breaking them, and the parents are so indifferent about it, that I do make a charge. The charge is never more than I think necessary to properly impress the parents with the seriousness of such carelessness. It works! Try it!

Objective two is to provide sufficient leisure during the working day to ponder over the inherent problems of an orthodontic practice, and to contemplate possible avenues of improvement in our professional techniques. In discussing this objective, it has been my experience that when I am crowded with patients every minute of the day, fitting appliances, repairing appliances, treating cases, et cetera, I do not render as good service, nor do I enjoy my work as much, as when I have an hour or so during the day—yes, occasionally even whole mornings—when I can sit at my desk and play, so to speak, with plaster models, roentgenograms, and photographs of patients, and mull over certain of my cases in general. Or, if I am not in the mood for this sort of thing, I can devote this time to catching up on my correspondence, or planning methods of improving the service. And, if I just want to sit—well, I just sit. Such interludes seem to ease the tension that the too intense practice of orthodontics generates, and it also stimulates renewed enthusiasm for the work. Many times, while "just sitting," a long-sought-for solution to a specific mechanical or other problem "bobs up" into consciousness. It would appear that our thinking processes function best when we are relaxed, and when we make the least effort to think.

The third objective is to provide sufficient net monetary income to afford us the opportunity of postgraduate study, and to provide, now and in the future, a standard of living for our families commensurate with our ideals, desires, and our station in life. Too many times, in my opinion, has this phase of professional practice been "soft-pedaled." It would seem that the mere mention of money in connection with a profession stamps such audacity as rank commercialism in some circles.

My philosophy in this matter is that we should not expect the heat of reward until we first build the fire of service; but, having built the fire of service, we have a legitimate claim to the heat of reward, and the reward should always be proportional to the service. Anything less than this is economically unsound, not only for the orthodontist, but for the patients as well. Orthodontists and patients alike are no more immune to the operation of the laws of economics than they are to the operation of the laws of gravity, even though a violation of economic laws seems to produce bumps of less abruptness.

"All who have any part in trade relations," says Mr. Charles Turner, of Marion, Ohio, "must be made to realize that nothing can be gotten for less than it is worth, and none may demand more or take more without setting in motion forces that will shatter trade stability, and for which someone must pay. No exchange of values is fair and equitable unless all concerned profit in exact proportion. This is an economic law."

For all parties to profit in exact proportion would naturally be a difficult adjustment in orthodontic practice. Many variables enter into the picture, and, of course, common sense should prevail at all times. It is not my purpose to tell you to raise your fees, to lower your fees, or what to charge. This, we

must work out for ourselves. I simply make this statement: our prime objective should always be to render the very best service of which we are capable, no matter what fee is to be received. Never should the service be trimmed to fit the fee, but neither should we hesitate to fit the fee to the service—the only requirement being, that this be done before treatment is started.

I would not consider it very desirable to be known as the "cheaper" orthodontist. Neither would I, if I were the parent of a patient, seek the services of such an orthodontist, because of the inducement of the lower fee. Ruskin has said, "There is scarcely anything in the world that some man cannot make a little worse and sell a little cheaper, and the people who consider price alone are this man's lawful prey." It does not follow, of course, that the quality of the service is always proportional to the fee charged. But, it has been aptly said that although you may not always get what you pay for, you will seldom, if ever, get anything that you do not pay for. It has also been said that self-preservation is the first law of nature. Superior and altruistic as are the men called orthodontists, not even they will long defy this law, and, at this point, the words of Shakespeare might be in order, "This above all: to thine own self be true, and it must follow as the night the day, thou can'st not then be false to any man."

So, we must have the courage to charge what we think our services are worth, without regard to what our confreres in the community may charge. If your confreres do not value their services as highly as you do your services, each of you is probably right.

"If I could live my sixty years over again," said Dr. Dayton Dunbar Campbell, "I would teach that the proper remuneration for a dental service is one that enables the operator to live in the same comfort and elegance as those whom he serves." If his long years of contact with professional fees provoked such conclusions, it would seem well for us to heed them now. If we are accused of being "high," we should be glad of the reputation. Such a reputation has never been a deterrent to the development of a fine practice, if and I emphasize the word, *if* the quality of the service is equal to the fee charged.

Recently, the George S. May Company, Business Engineers of New York and other principal cities, ran a full-page advertisement in the *Wall Street Journal,* and only these few words were used: "We charge more for our service than anyone else in the business. Why?" Certainly this bold public statement of charging more than anyone else in the business would drive away clients, if the high charge myth were a reality. But, what has actually been the effect of the George S. May Company's policy? Here are the figures: In 1943, their gross income amounted to $6,157,142.00, which represented a 102 per cent increase over 1942 income. Why? Because their services undoubtedly measured up to their charges. Their clients realized that their services did not cost, but, on the contrary, they paid.

Obviously, of equal importance to making the proper charge for services is the matter of the proper collection of accounts due. A mutual understanding with the parent as to the fee to be charged, and a definite plan of payment before any service is rendered, is of greatest aid in this matter. I make it a routine practice, after the financial agreement has been made, to write these

details on the patient's record card, and then pass the card to the parent for verification. Their approval or disapproval of the recorded agreement is invited at this time. This procedure has solved 90 per cent of my collection problems.

Should payments become delinquent, the parent is immediately reminded of our mutual agreement, in some such plain language as follows: "I agreed to give you my very best services in the correction of your child's teeth. You agreed to pay for this service according to a definite plan. I am keeping my agreement. You are not. For this to work out right, we both must do what we promised." Slightly blunt? Yes! The truth? Yes! Result? I have yet to find a parent who did not see the justice of my position and who failed to remit promptly. I believe directness is a much better way of handling such matters than a roundabout, half-apologetic request for payment. If we have honestly earned our fee, we should get after the parent and insist on payment. If we are doubtful about it, we should get after ourselves and correct our faults.

We need to apply practical methods to collections. However, I would not recommend going quite as far as a certain restaurant owner. A customer had just eaten a $2.50 dinner and presented his check to the owner, who was also the cashier, with the explanation that he was temporarily out of funds and would appreciate extension of credit for the amount of the check. The owner was glad to oblige, but said to the customer, "I don't keep any books, so I'll just write your name on the wall over here with this piece of chalk—George Smith owes me $2.50." "No, don't do that," replied George, "everybody will see it as they pass by this cash register." "No, they won't see it," said the owner in reassuring tones, "I'll hang your overcoat over it."

Now, friends, my twenty minutes are up. It is time to close this paper, which I do with a quotation from Walt Whitman:

> "Roaming in thought over the universe, I saw the little that is good steadily hastening toward immortality,
> And the vast all that is called evil, I saw hastening to merge itself and become lost and dead."

To a similar fate, I humbly consign the thoughts expressed in this paper.

817 Donaghey Building

Editorial

"Braces"

Americans usually use the word "braces" with reference to something denoting rigidity or support. The dictionary defines a brace as a prop, a support, or a stanchion. According to the dictionary definition, then, the British have something definitely descriptive in their nomenclature when they use the word braces to describe something that supports the trousers.

In America, "braces on the teeth" has become a familiar expression used in the "movies" and in magazine articles, as well as in daily conversation.

Even orthodontists, with whose occupation the word is linked, have become so surfeited and propagandized with the use of the word "braces" by their patients that some of them use the term, obviously, as the line of least resistance.

It can hardly be said, however, that this particular term, which seems to be largely a product of the last ten years, does very much for the merit of orthodontics as an important division of health service.

Speaking of general health service, facts uncovered by the War Department concerning the physical unfitness of the men of this country are beginning now to have their first repercussions. A Congress committee is now exploring the situation revealed by physical examinations for the draft. Out of that exploration, very probably, is to come renewed demand for broader social security and health service, perhaps a start toward wider physical care for persons other than war veterans.

In this connection, it is gratifying to read the fine tribute the lay press is paying to the part played by medical science and good medical organization in the great conflict. Orthodontists have not forgotten that an orthodontist, Dr. Eby, using his wide training in orthodontics as a start, made one of the outstanding contributions to the field of maxillofacial surgery during World War I, and many of his contributions were published and recorded for all time in the pages of the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY, and also in textbooks that are now used by the Armed Forces.

It is reasonable to suppose that even now many orthodontists are writing an indelible record in this work in many field and base hospitals throughout the world by using their skill and dexterity in the manipulation of complex and delicate mechanical devices.

When orthodontics, along with all other specialties of medicine and dentistry, is finally called before the bar of justice of all health service to establish its importance in child welfare, let it be hoped that there is a more satisfactory layman's language to convey its status in the Social Security setup than the one that is now becoming so currently popular in lay magazine articles and in everyday conversation.

It would, no doubt, be well to go back to the terminology of the early teachers of orthodontics, who corrected malocclusion and did not try to necessarily "straighten teeth." They were the ones who changed the popular name of the mechanical devices, from "regulating appliances" to "orthodontic appliances" by asking the simple question, "What do you propose to regulate, the liver, the teeth, or the clock?"

With the fine record orthodontics has made in the correction of deformities of the teeth, face, and jaws, along with the amazing contributions to maxillofacial surgery, it seems fitting that an effort should be made to delete the noun denoting English wearing apparel from the orthodontic language, and to substitute for it words that more appropriately convey the purpose of the specialty that has provided the richest and most comprehensive recorded and published literature of any single department of dentistry.

"Braces" is plainly and largely a product of modern slang, and orthodontists should discourage it. It does the specialty no good.

H. C. P.

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Max E. Ernst, Secretary, American Association of Orthodontists, 1250 Lowry Medical Arts Bldg., St. Paul, Minn.

Department of Orthodontic Abstracts and Reviews

Edited by

Dr. J. A. Salzmann, New York City

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

Studies on the Incidence and Cause of Dental Defects in Children. IV. Malocclusion: By Marcu Brucker, D.D.S., Newark, N. J., *J. Dent. Research* **22**: 315-321, August, 1943.

A study was made of 1,668 white school children (863 boys and 805 girls) of Newark, New Jersey. Their ages ranged from 5 to 15 years and their socioeconomic status was above the average.

The pupils investigated were divided into three groups: first, those with malocclusion of either the permanent or the deciduous teeth (no mixed dentition was present in any of them); second, those with malocclusion of the transitional or mixed dentition; and third, those who were free from malocclusion.

The children comprising the first group will be referred to as having "true" malocclusion. The pupils in the second group will be alluded to as having "malocclusion of the transitional dentition."

Of the total number of pupils examined, 182 boys and 195 girls showed true malocclusion and 324 children had malocclusion of the transitional dentition. The classification of children affected with malocclusion of the permanent or of the transitional dentition (in the latter case where the four first permanent molars were fully erupted) was based on standards of Angle as follows: Class I is characterized by a normal mesiodistal relationship of the upper and lower arches, with malocclusion of the anterior teeth; in Class II the lower arch and teeth are distal to normal in their relation to the upper; in Class III the lower jaw and teeth are mesial to normal in their relation to the upper. Malocclusion of the deciduous dentition (with no first permanent molars erupted) was based on the relationship of the upper and lower teeth when the jaws were brought together.

It is important to note that 57 children (28 boys and 29 girls) with true malocclusion (of either the permanent or the deciduous teeth) were free from caries. Forty-nine pupils (29 boys and 20 girls) with malocclusion of the transitional dentition were also free from caries. Of the latter number, 38 showed deep overbite, eight open bite, and three edge-to-edge bite.

The age at which malocclusion of the transitional dentition was most frequently manifested was 10 years (82 cases). The age at which true malocclusion was found to predominate was 15 years (97 cases).

Conclusions.—The findings indicate that the incidence of caries in children having malocclusion of the transitional dentition was substantially higher than in those free from caries. Also the incidence of dental decay in those having true malocclusion was higher than in the children who were free from malocclusion. Nineteen per cent of the total number of pupils examined had true malocclusion and in them 29 per cent of the total number of cavities was registered. The influence of malocclusion on the incidence of caries has thus been shown. Malocclusion of the deciduous teeth was noted in nine pupils, all boys. Children free from caries were observed in both groups, suggesting the conclusion that where caries resistance exists, malocclusion is not effective in its initiation.

Extractions in a General Dental Practice: *J. Wisconsin D. Soc.* **20**: 3-14, January, 1944.

Stafne of the Mayo Clinic presents a detailed technique for the removal of infected teeth. Roentgenograms of edentulous regions have revealed evidence of failure to remove teeth in their entirety in many instances, but it is encouraging to note that in recent years these failures have become less numerous.

In pulpitis the use of ice is the most reliable means of detecting the offending tooth. In inflammation of the pulp, when ice is applied to the tooth the pain produced is prolonged. When the pulp has become putrescent, continued application of ice to the involved tooth invariably affords relief from pain. The reaction can be made more striking by a previous application of warm water.

The roentgenogram will forewarn the dentist by revealing density of the alveolar process, hypercementosis, extreme divergence and abnormal curvatures of the roots, and location of the upper teeth in relation to the maxillary sinus. Postoperative roentgenograms will reveal a fractured process, sequestra, roots or fragments of tooth structure, or foreign bodies.

Asymmetry of the Face: By John R. Thompson, D.D.S., M.S.D., M.S., Chicago, Ill., *J. Am. Dent. A.* **30**: 1859-1871, Dec. 1, 1943.

There is no truly symmetrical face regardless of the race, age, or period of the individual. The normal asymmetry is not very evident, whereas the abnormal asymmetry is quite obvious. Twenty-five cases were studied. The records consisted of the following: clinical findings, cephalometric and temporomandibular roentgenograms, photographs, and models.

Asymmetry may be the result of a warping of the growth pattern of the face, destruction of a vital growth center, paralysis, and other conditions that exert an influence during the growth period. There are cases of asymmetry that occur because of loss of bone from the jaws.

ETIOLOGIC FACTORS IN CASES OF ABNORMAL FACIAL ASYMMETRY

A. Direct injuries to and loss of bone.

1. Infection (osteomyelitis).
2. Fractures with malunion or nonunion.

3. Loss of bone due to: (a) trauma (projectiles) or
(b) resection (carcinoma).

B. Direct injuries of growth sites.*

I. Prenatal injuries, with distortion of growth pattern.

1. Abnormal position of embryo.
2. Intrauterine tumors of mother.

II. Birth injuries, with or without distortion of growth pattern, depending on sites affected.

1. Precipitate delivery.
2. Breech presentation and obstetric injuries.

III. Postnatal injuries.

1. Destruction or disturbance of growth center at head of condyle.*
   (a) Infections (with or without ankylosis).
   (b) Traumatic (fall or blow on chin transmitted to temporomandibular joint followed by traumatic arthritis, fibrosis, or ankylosis).
2. Tumor in temporomandibular joint.

C. Indirect effects upon growth sites of neuromuscular afflictions.*

I. Prenatal injuries (congenital nerve and muscle afflictions centered about head and neck).

II. Birth injuries (brain injuries resulting in paralysis).*

III. Postnatal injuries.

1. Spastic paralysis.
2. Curvatures of spine.
3. Torticollis.
4. Postural defects.
5. Tumors.
6. Poliomyelitis.
7. Muscular hypertrophy.

D. Idiopathic factors.

In a serial x-ray study of growing children, Brodie observed that the relationship of the mandible to the maxilla and cranium is established very early, before any teeth erupt. The jaws of the infant are not in approximation but are separated with the tongue protruding between them, supporting the lips. This relationship of mandible to cranium can be recorded by measuring the angle formed by a line drawn tangentially to the lower border of the mandible with the line connecting the nasion and sella turcica. This angle does not change with subsequent growth.

Since the position of the mandible is established before any of the teeth have erupted, this relationship must be dependent on the musculature attached to the mandible. In order to understand this function of musculature, the posture of the head on its flexible spinal column must be observed. Bilaterally, the posture is maintained by balanced tonicity of paired muscles, both anteriorly and posteriorly from the spinal column. Anteroposteriorly, however,

*The severity of the asymmetry and the age at which the etiologic condition develops, are directly proportionate. Therefore, ankylosis is much more serious in a child of 3 years than in a person of 15 or 20 years, since the deformity will become progressively worse as the growth continues in the other normal growth centers of the head and face.

the maintenance of posture is not so evident, for two reasons: First there is more weight anteriorly from the spinal column than posteriorly, and thus gravity becomes a factor. Second, the muscles anteriorly from the spinal column are entirely different in size and arrangement from those posteriorly. The postcervical muscles are very powerful, and as they pull downward and backward on the head, their force more than equalizes the anterior force of gravity. The action of this muscle group must be counterbalanced by more than gravity; otherwise, the head would be carried backward. A continuous sheath of muscles from cranium to thorax would balance the posterior muscles, but would not permit mastication, deglutition, or respiration.

Each of these functions calls for the movement of different parts and, as a result, the anterior muscular arrangement is in the form of a chain, each link of which is capable of independent, but coordinated action. The chain as a unit counteracts the excess pull of the posterior group and maintains the posture of the head.

The chain is composed of three major links: the muscles of mastication connecting the mandible with the cranium; the suprahyoids, suspending the hyoid bone and larynx from the chin point and base of the cranium, and the infrahyoids, connecting the hyoid bone and thorax. The spatial relationship of the parts is maintained by the tension of these muscular groups. Thus, the position of the mandible at rest is determined, not by the teeth, but by the musculature running to the mandible from above and below, the same as the hyoid bone.

Any disturbance in the continuity of the mandible will upset this muscular balance. Normal muscular tension could then cause displacement of the bony parts. The balance can be re-established only when the segments of bone are restored to their proper relations.

Brodie's studies further revealed that the lower border of the mandible descends in parallel planes as does the occlusal plane and the floor of the nose. Anatomic landmarks, such as the anterior nasal spine, tip of the maxillary incisor and chin point, move downward and forward on a series of straight lines. The nasal height was found to contribute 43 per cent to the total face height.

The components of vertical growth in the anterior part of the face are four: the maxilla, maxillary alveolar process, mandibular alveolar process, and mandibular growth. Since the growth pattern is stable, this anterior vertical growth must be equaled by growth in the back of the face. There is only one site of growth that accounts for this vertical growth; that is, the head of the condyle, which must grow at a rapid rate in order to equalize in growth the four anterior growth factors.

News and Notes

New York Institute of Clinical Oral Pathology

The first open meeting of the New York Institute of Clinical Oral Pathology will take place in Hosack Hall at the New York Academy of Medicine, 2 East 103rd Street, New York City, on Monday, Oct. 30, 1944, at 8:15 P.M.

Dr. Arthur H. Merritt will preside at a symposium on "Fluorine in Dental Public Health."

The following outstanding investigators will participate:

Dr. Fredrick S. McKay, Colorado Springs, Colorado
"Fluorine and Mottled Enamel: A Historical Survey"

Dr. H. Trendley Dean, Senior Dental Surgeon, U.S.P.H.S., Bethesda, Md.
"The Epidemiology of Fluorosis and Dental Caries"

Dr. Wallace D. Armstrong, University of Minnesota, Minneapolis, Minn., Associate Professor of Physiological Chemistry, Director of Laboratory of Dental Research
"The Fluorine Content of Enamel in Relation to Resistance of Teeth to Caries"

Dr. Basil G. Bibby, Dean, Tufts Dental College
"Effects of Topical Application of Fluorides in Dental Caries"

Dr. David B. Ast, Assistant Director for Oral Hygiene, State of New York Department of Health, Division of Maternity, Infancy and Child Hygiene
"The Practicability, Efficacy and Safety of Fluorinating a Communal Water Supply Deficient in Fluorine to Control Dental Caries"

For further information address all communications to the Executive Secretary, 101 East 79th Street, New York 21, N. Y.

The Training of Dental Officers

Prior to the declaration of war, and the two years following it, more than six hundred reserve dental officers had received formal instruction in oral surgery, prosthetics, and clinic management. There have also been Dental Corps internships, courses in maxillofacial plastic surgery, and courses at the Medical Field Service School, Carlisle Barracks, Pennsylvania.

In 1939 the War Department authorized a system of Dental Corps internships. Eight interns were selected to serve for twelve months as employees of the Government in a civil capacity, receiving quarters, subsistence, and a salary of $60 per month preparatory to appointment in the Regular Army. These internships were terminated in 1943.

Two hundred and sixty-two dental officers were afforded training in maxillofacial and plastic surgery before the end of 1943, in courses varying from four to twelve weeks.

By the first of July, 1944, a total of 3,797 dental officers had been issued certificates upon graduation from the Department of Dental Field Service, Carlisle Barracks.

Notes of Interest

Dr. Ben L. Reese announces the removal of his offices from 1158 Roosevelt Building and 5514 Wilshire Boulevard to a new location in the Pellissier Building, 3780 Wilshire Boulevard at Western, Los Angeles, California.

Dr. Albert P. Horton announces the removal of his office to 936 Republic Building, Denver, Colorado, Sept. 1, 1944. Orthodontics exclusively. Telephone, KEystone 3836.

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American Association of Orthodontists

President, Archie B. Brusse _ _ _ _ _ _ _ _ _ _ _ 1558 Humboldt St., Denver, Colo.
Secretary-Treasurer, Max E. Ernst _ _ _ 1250 Lowry Medical Arts Bldg., St. Paul, Minn.
Public Relations Bureau Director, Dwight Anderson _ 292 Madison Ave., New York, N. Y.

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President, Arthur C. Rohde _ _ _ _ _ _ _ _ 324 E. Washington Ave., Milwaukee, Wis.
Secretary-Treasurer, L. B. Higley _ _ _ _ _ _ _ 705 S. Summit St., Iowa City, Iowa

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President, Henry D. Cossitt _ _ _ _ _ _ _ _ _ _ _ 942 Nicholas Bldg., Toledo, Ohio
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Secretary-Treasurer, Norman L. Hillyer _ _ _ _ _ Professional Bldg., Hempstead, N. Y.

Pacific Coast Society of Orthodontists

President, J. Camp Dean _ _ _ _ _ _ _ _ _ _ _ 1624 Franklin St., Oakland, Calif.
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President, J. Lyndon Carman _ _ _ _ _ _ _ _ _ _ 501 Republic Bldg, Denver, Colo.
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Southern Society of Orthodontists

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President, Harry Sorrels _ _ _ _ _ _ _ _ Medical Arts Bldg., Oklahoma City, Okla.
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Harvard Society of Orthodontists

President, Max Abrams _ _ _ _ _ _ _ _ _ _ _ 184 Shirley Ave., Revere, Mass.
Secretary-Treasurer, Edward I. Silver _ _ _ _ _ _ _ 80 Boylston St., Boston, Mass.

*The Journal will make changes or additions to the above list when notified by the secretary-treasurer of the various societies. In the event societies desire more complete publication of the names of officers, this will be done upon receipt of the names from the secretary-treasurer.

Washington-Baltimore Society of Orthodontists

President, Meyer Eggnatz - - - - - - - - - - - Medical Arts Bldg., Baltimore, Md.
Secretary-Treasurer, William Kress - - - - - - - Medical Arts Bldg., Baltimore, Md.

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Secretary, R. Cutler - - - - - - - - - - 8 Lower Sloane St., London, S.W. 1, England
Treasurer, Harold Chapman - - - - - - 6 Upper Wimpole St., London, W. 1, England

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Treasurer, Edmundo G. Locci

Sociedad Peruana de Ortodoncia

President, Augusto Taiman
Vice-President, Ricardo Salazar
Secretary, Carlos Elbers
Treasurer, Gerardo Calderon

*The Journal will publish the names of the president and secretary-treasurer of foreign orthodontic societies if the information is sent direct to the editor, 8022 Forsythe, St. Louis 5, Mo., U. S. A.

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S. S. White New Orthodontic Appliances

BRACKETS NOS. M 464 and M 465

A modification of the Dr. E. H. Angle Edgewise Arch Bracket for use with other types of arches, made in response to requests for a bracket of this type and after a suggestion by Dr. A. F. Jackson. These brackets are about half the height (consequently project less) and are considerably longer than the Edgewise Arch Bracket.

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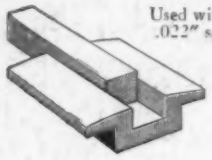
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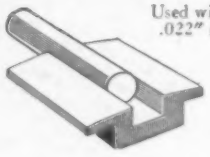
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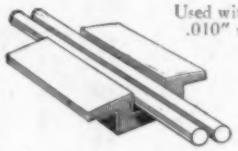
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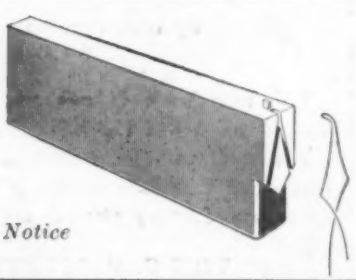

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